

DOCUMENT RESUME

ED 444 448

HE 033 211

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TITLE When Teaching Includes Training.
PUB DATE 1993-11-00
NOTE 16p.; Paper presented at the Annual Conference on the Training and Employment of Graduate Teaching Assistants (4th, Chicago, IL, November 10-13, 1993).
PUB TYPE Opinion Papers (120) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Learning; *Computer Uses in Education; *Educational Technology; Elementary Secondary Education; Higher Education; Preservice Teacher Education; Teacher Competencies; Teaching Assistants; Teaching Methods

ABSTRACT

The ongoing debate over the difference between education and training may soon become totally irrelevant as research continues to suggest increased learning potential, irrespective of discipline, when computer technology is incorporated within learning environments. At the postsecondary level, where adults are amassing and assimilating huge volumes of information, the inclusion of computer technology serves as an anchor of support for learning and contributes to the activation of cognitive instructional strategies. Previous reasons for computer exclusion are no longer justifiable. The current issue may actually be one of knowledge, skill, and manpower, all of which are resolvable by teaching and training teaching assistants (TAs) to incorporate technology within the instructional setting. Raising the knowledge and skill levels of future professors means a direct transfer of knowledge and skills to the teaching environment. It may also mean increased competency for conducting research, which is expedited by using technology. When the instructional setting for TAs also becomes a training ground for utilizing technology, the first step will have been undertaken toward building a solid partnership between education and training. This is no longer an option. It is a necessary requirement for preparing the next generation of professors for successful futures. (Contains 46 references.) (Author/SM)

**WHEN
TEACHING
INCLUDES TRAINING**

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Paper presented at the
4th National Conference on the
Training and Employment of Graduate Teaching Assistants
November 10-13, 1993
Hyatt Regency Oak Brook
Chicago, Illinois

Abstract

The on-going debate over the difference between education and training may soon become totally irrelevant as research continues to suggest increased learning potential, irrespective of discipline, when computer technology is incorporated within learning environments. At the post-secondary level where adults are amassing and assimilating huge volumes of concrete and abstract information, the inclusion of computer technology within the classroom serves as an anchor of support for learning. It also contributes to the activation of cognitive instructional strategies. Previous reasons for computer exclusion are no longer justifiable. The current issue may actually be one of knowledge, skill, and manpower, all of which are resolvable through the teaching AND training of TAs to incorporate technology within the instructional setting. The many advantages to raising not only the knowledge level, but also the skill level of future professors, means a direct transfer of both knowledge and skills to the teaching environment. It may also mean increased competency for conducting research, which is expedited through the use of technology. When the instructional setting for TAs also becomes a training ground for utilizing technology, we will have taken the first step towards building a solid partnership between education and training. This is no longer an option. It is a necessary requirement for preparing the next generation of professors for a successful future. And what better place to start than with TAs.

When Teaching Includes Training

Personal computers (PCs) are still quite young which contributes to the complication of justifying their inclusion in educational settings (Betra, 1986). Slightly more than a decade old, their potential role in today's world has been either ignored or compromised by numerous educators (Butler, 1986; Cataldo, 1989; Lyle, 1985; Murray, 1992; Robbins, 1992; Smith, 1989; Wiget, 1989; Willis, 1991). Speculations regarding whether several new technologies can actually change human learning are turning into promising and exciting opportunities for those who choose to endorse them (Criswell, 1989; Grossman, 1991; Lambert & Tice, 1993; Ross, 1984; U.S. Congress, 1988; White, 1986). Whereas many still struggle with the anticipated match between technology and learning, computer-based education is generally acknowledged to be a promising learning technology (Barger & Armel, 1992; DeLoughry, 1992; Lewis & Wall, 1988; McGill, 1984; Sager & Konomos, 1991).

Since 1984, evidence has been mounting which suggests that technology can improve teaching (Butler, 1986; Johnston & Joscelyn, 1989; Pina & Savenye, 1992; Ross, 1984; Smith, 1989). This is good news, particularly since allegations exist which suggest that the United States may not be very good at educating and training its workforce and that colleges and universities may not be very good at aiding potential teachers in using computers in educational settings (Beaver, 1990; Moursund, 1989). Even though the computer revolution has been fought and won, faculty have been slow to incorporate computer-based activities within their instructional methods (Black, 1990).

Several problems are well defined. Higher education must address unavoidable issues: (a) the declining population of traditional students between the age of 18-22 year olds, (b) the

high percentage of academically unprepared freshman entering higher education institutions, and (c) the influx of part-time older adult learners with limited time for educational activities. Along the same continuum, education and training activities in the corporate sector are increasing along with growing public criticism regarding the quality and relevance of higher education curricula to corporate needs. These issues translate into increased responsibility on behalf of instructors who need a strategic plan for communicating massive quantities of information at a higher cognitive level. These issues translate into the need for change.

Lewis & Wall (1988) and Ross (1984) advocate that there might be some truth to the claim that college and university faculty toy with information technologies, yet continue to teach like their predecessors. Murray (1992) reminds us that although the traditional lecture has its rightful place, strategies must be implemented to make them more interesting, worthwhile, applicable to the proper environments, and current. What took hundreds of years to turn the textbook into a mature technology cannot be used as a baseline to learn how to integrate computer, video, and audio technologies into academic instruction. Lyle (1985) and Morano (1984) both contend that part of the problem may lie in the original failure of faculty to integrate older technologies into their instructional strategies. When the intent is to teach students to use technology, education alone falls short of the mark. According to Bruder (1989), quality training and on-going support is our best alternative. If learning to use technology is indeed a lifelong process (Gooler, 1989), college and university faculty should be amongst the first to embrace it.

The purpose of this paper is to rekindle an awareness of the responsibilities that colleges and universities have for preparing future leaders of a rapidly changing technological world to take their rightful place in the Information Society. This awareness is rooted in a perspective of

change, which demands technological involvement from those charged with educating future generations. The focus of academics on education may indeed necessitate a paradigm shift to include training.

Education Versus Training

Many confuse training with education (Spitzer, 1991). Education, as defined by Hawes & Hawes (1982, p. 73) is, "any process, formal or informal that helps develop the potentialities of human beings, including their knowledge, capabilities, behavior patterns, and values; the total development acquired by an individual through instruction and learning." When defined in contrast to training (Rowntree, 1981), p. 75), education is said to be "the process of successful learning of knowledge, skills, and attitudes, where what is learned is worthwhile to the learner and usually (in contrast to training) where it is learned in such a way that the learner can express his/her own individuality through what he/she learns and can subsequently apply it, and adapt it flexibly, to situations and problems other than those he/she considered in learning it." When contrasted with education, Rowntree (1981, p. 327) places a major emphasis on job/task performance by defining training as "the systematic development in a person of the knowledge, attitudes, and skills necessary for him to be able to perform adequately in a job or task whose demands can be reasonably well identified in advance and that required a fairly standardized performance from whoever attempts it."

Regardless of the definition, it is important to realize that both education and training are deeply rooted in the principles of learning (Hawes & Hawes, 1982, Patrick, 1992; Rowntree, 1981; Spitzer, 1991). Learning, according to Rowntree (1981, p. 153) is "a long-lasting change in knowledge, attitude, or skill, acquired through experience." This experience may take one of

many forms, (e.g. conditioning, education, incidental learning, instruction, training). The generality of education and the specificity of training create a powerful partnership, particularly when united relevant to technology use.

Lyle (1985) identified the PC one of the most beneficial technological tool across all disciplines. Because of its increasingly user-friendly interface, it functions successfully as a tool, a tutor, and a tutee (Betra, 1986). Surprisingly, some educational institution still advocate print as the best, the major, and often the only means for imparting information (White, 1986). DeLoughry (1992) and Fulton (1989) attribute this reluctance to change to the lack of training and experience on the part of faculty with computers as teaching tools. Such reluctance reinforces fear of change in relationships, fear of criticism or perception of violations of professional values, and lack of understanding (Bransford, Goin, Hasselbring, Kinzer, Sherwood, & Williams, 1986; Faseyitan, 1992; Liebowitz, 1988; Sager & Konomos, 1991; Trollip & Alessi, 1988). This resistance can be corrected through the education and quality training of faculty, but only when the faculty are in agreement with such a change. Other alternatives tend to focus on the use of TAs to utilize technology for instructional delivery.

Why Technology Should Be Used

There are a variety of reasons to use or not to use technology, however, the benefits far outweigh the drawbacks. In addition to improving the lecture experience (DeLoughry, 1992; Gooler, 1989; Lambert & Tice, 1993; Murray, 1992), technology use enhances and increases faculty and student productivity (Robbins, 1992; Ross, 1984). It creates challenging ways to learn and teach; and it helps students experience phenomena that are not easily demonstrated in a traditional classroom (Brown, 1989; Slevin, 1992). Generic skills, like problem-solving or

analysis, can be conveyed which are normally quite difficult to teach. According to White (1986), we can change the minds and attitudes of students through the use of technology, because exposure to technology advocates the use of technology (Willis & Willis, 1989). We indirectly prepare students for the world of work by showing them valid reasons for using technology, particularly PCs. And equally important, we provide them with a competitive edge for graduate school, doing research, and surviving the professorate (Mecklenburger, 1986; Slevin, 1992).

Advocacy for Teaching and Training

We have come a long way since IBM introduced its first microcomputer in 1981 (Blissmer, 1987, p. 429). Few would deny that educational technologies hold anything less than tremendous promise for creating improved learning environments (Sager & Konomos, 1991). The next decade will be crucial as computers and other technologies are used for instruction, communication, and distance learning (DeLoughry, 1992). The successful use of technology as a part of instruction is two-fold; it requires the skills for running the equipment and software, and the knowledge of how to teach the technology (Glen & Carrier, 1986).

One major issue of concern relevant to the advocacy of teaching AND training is that colleges and universities are the breeding grounds for teacher preparation programs. Content for these programs is largely determined by those who teach teachers (Gooler, 1989). Students normally model the methods they were taught (Beaver, 1990) and teachers normally teach the way they were taught (Ross, 1984). Teachers will, therefore, use technologies only to the extent to which they themselves are comfortable and familiar (Gooler, 1989). Research suggests that faculty who adopt computers in their classrooms for instructional activities tend to be from

technology-oriented disciplines (Faseyitan, 1992). This does not have to be the case. If faculty are properly trained to use the technology, allowed to phase the technology into their instructional methods and appropriately rewarded for their contributions, the odds are high that their students will use and understand technology as well (Bruder, 1989). The first step, however, is for faculty to use computers themselves so that they can apply their knowledge and skills to their immediate needs and then implement it into their teaching (Bruder, 1989).

Teaching excellence is the responsibility of the institution as well as the individual (Ross, 1984). If faculty are to become technologically literate, universities must create tangible opportunities for faculty to utilize the latest educational technologies; and create opportunities for faculty to integrate these technologies into the curriculum (Sager & Konomos, 1991). Rewards must be apparent (Ross, 1984). To encourage faculty commitment in the use of technology is to make the instructional use of technology a key consideration in personnel issues including tenure and discretionary salary determinations (Beaver, 1990). One of the most serious misconceptions about training is the belief that if we tell people (and show them) how to perform a task, they will be able to do it (Spitzer, 1991). This fallacy should be replaced with something that works - good, quality training. Every college professor has a professional and ethical obligation to consistently evaluate technological education methods to improve his/her effectiveness as a teacher (Ross, 1984). In lieu of the desire to provide such an experience to future generations, consideration should be given to transferring that responsibility to competent TAs.

Training is needed if faculty are to overcome their fears and increase their computer self-efficacy (Faseyitan, 1992). Training gives teacher the necessary skills to work the technology,

and education provides a vision of how to work with it (Fulton, 1989). It is now time to knock down the barriers and cooperate with the private sector in helping to develop a technology-competent workforce (Blake, 1989).

Conclusion

If the job of instruction is worth doing, it is worth doing well. If indeed statistics are correct and people retain about 20% of what they hear, 40% of what they see and hear, and 75% of what they see, hear and do (Pina & Savenye, 1992, p. 2,7), then we must do more than just tell them because inevitably, they may forget. Let's do more than just show them, because all they can do is try to remember. Let's get them involved by using technology as a means of helping them reach a place of understanding (Anonymous Author in Stahl, 1991, p. 97). For those educators who are willing to teach using technology, let's get them trained. And for those who refuse, let's get them a trained TA.

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